D 301.81:33/7

Combat Crew

strategic air command

★ ★ ★ ★

JULY 1982

SAC

AUG 23 1982

Combat Crew

Magazine of the Strategic Air Command 32nd Year of Publication

GEN. BENNIE L. DAVIS
COMMANDER IN CHIEF, SAC

BRIG. GEN. HAROLD J. M. WILLIAMS
Inspector General

COL. RICHARD A. PATRICK
Director of Safety

STAFF

Editor
Capt. Randy Lauterbach

Associate Editor
G. Francis Farrell

Art Editor
Sgt Steve Parrish

Editorial Assistant
M. J. Abboud

UNIV. OF FLA. LIB ★ DOCUMENTS DEPT.
AUG 23 1982

IN THIS ISSUE

Cavalry and Priorities 4
Life After Navigation 6
The Happy Warriors 8
Cutting Edge 10
Are You a Pro? 11
Big "I" 14
Technology 16
Altitudes vs Precision 18

ON THE COVER

Hurrah!! For the 4th of July — and for SAC too!

SACRP 127-1 VOL XXXII NO. 7 JULY 1982

COMBAT CREW is an internal publication of the Strategic Air Command with the sole purpose of promoting safety. The contents of this magazine are informative and not to be considered as directive in nature. Facts, testimony and conclusions of all mishaps printed herein may not be construed as incrimination under Article 31 of the Uniform Code of Military Justice. All names, dates and places used in conjunction with mishap stories are fictitious. Written permission must be obtained from Headquarters Strategic Air Command, before any material may be reprinted by other than U.S. Air Force organizations. Use of funds for printing this publication has been approved by Hq USAF. Distribution FX controlled by IGFC SAC units submit distribution requests through local PDO. Reader to copy ratio 9:1.

Subscriptions are available from The Superintendent of Documents, Government Printing Office, Washington, D.C. 20402. Price $22.00 per year domestic, $27.50 if mailed to a foreign country, or $2.75 domestic or $3.45 foreign single copy. Contributions are encouraged as well as comments and criticisms. Direct correspondence with the Editor is authorized. Address correspondence to Editor

COMBAT CREW, Hq SAC/IGFC Offutt AFB Ne 68113. Authority to publish this periodical automatically expires on 23 Oct 83, unless its continuance is authorized by the approving authority prior to that date.

DEPARTMENT OF THE AIR FORCE

FLARE

General B. L. Davis Commander in Chief, SAC

It has been almost one year since I assumed my present position as Commander-in-Chief of the Strategic Air Command, Director of the Joint Strategic Target Planning Staff (JSTPS) and Director of the Joint Strategic Connectivity Staff (JSCS). I want to take this opportunity to reflect on some of the strategic modernization initiatives that have occurred over the past year and to discuss briefly some of the challenges that lie ahead.

This past year we witnessed a national awareness for the necessity to modernize our strategic forces to meet an ever expanding Soviet threat. On October 2, 1981 President Reagan outlined a five point strategic modernization plan which included:

- Improvements in Command and Control systems for our forces.
- Modernization of the Strategic Bomber force.
- Deployment of new submarine launched missiles.
- Improvement of our land-based missiles, as well as a follow on survivable basing mode.
- And, the restoration of our strategic defenses.

Challenges Ahead

This is the most comprehensive strategic modernization program since the 1950's and 1960's. It is a plan designed to strengthen deterrence, close the gap in strategic nuclear capability between the United States and the Soviet Union and provide a meaningful incentive for future arms reduction agreements.

For the Strategic Air Command this program begins an important chapter in the composition of our future force structure. After many years of disappointments, cancellations and delays we are now beginning to move out in the development and deployment of new and modernized equipment. In the next three to four years we will begin to see these systems in the field. Here is where we stand.

In terms of bomber modernization we have made tremendous progress in the development of the B-1B aircraft. On 20 January of this year Rockwell International was awarded two contracts for full scale development and production of the B-1B. The highly accelerated production program for the bomber is already underway. Preliminary engineering design review of the first B-1B was completed by Rockwell on 1 April 1982 with the final, critical design review scheduled for early next year.

In the next few years we will be flying two of the four B-1A's in our inventory, number two and number four airplanes, with number four becoming the avionics test bed. We expect to roll out the first production B-1B airplane in 1984, fly it early in 1985, and equip our first operational squadron in 1986. I might add that these dates are all contractually binding dates. The contractors are optimistic that they will be able to beat each of these dates, and so am I.

Modernization of our land-based ICBM's centers around the development and deployment of the MX missile. While the final MX basing mode has yet to be determined, development and testing of the missile itself is proceeding very well. On 28 January 1982 an integrated test facility for the MX was dedicated at Vandenberg AFB, this is the first MX test facility. All the other MX testing facilities are on track and are also nearing completion. The first MX test flight is currently scheduled for January 1983. Follow-on testing of the missile will begin in 1986 after the MX achieves its initial operational capability.

Regarding the basing mode for the MX, we are currently evaluating an additional mode called Closely Spaced Basing that looks very promising. The concept we envision is to deploy the MX in superhardened shelters, closely spacing these shelters approximately 1/3 to 1/2 mile apart and deploying the missiles on governmental owned land. It has been estimated that to deploy 100 MX missiles requires approximately 10-15 square miles of land.

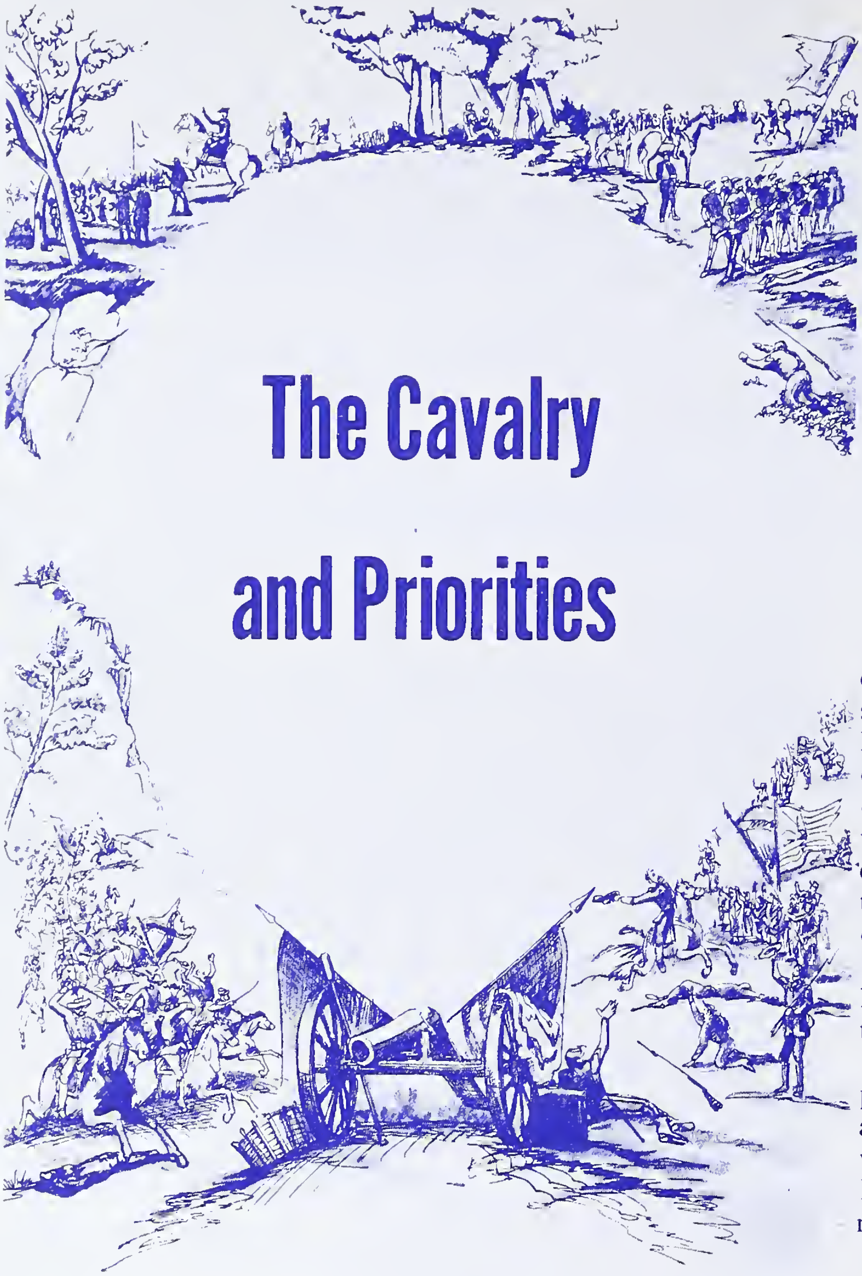
There are still some technical questions which must be resolved; however, our studies show that by closely spacing our MX missiles the Soviet Union could not be confident of destroying all of our missiles based on the effects of fratricide (a phenomenon whereby the detonation of incoming warheads would kill or deflect subsequent warheads from reaching their targets).

The next major area of interest to SAC I would like to quickly cover is the improvements to our Command, Control and Communications (C3) systems. No matter how powerful and survivable we might make our strategic forces, their deterrent strength would be a hollow bluff if we could not communicate with them in a crisis. It is for this reason that President Reagan has made improvements in our C3 network his number one strategic priority. It is absolutely essential that as we begin to modernize our weapon systems that the associated command, control and communications systems be as survivable and enduring as the forces they support.

Specifically, we are improving the survivability, performance and coverage of radars and satellites used to warn us of a Soviet missile attack and to assess its nature, size and scope. Additionally, we are presently upgrading the survivability and capability of command centers that would direct our forces during a nuclear war. We are also equipping our forces with very low frequency and low frequency communications receivers that will help link our command centers with all three legs of the U.S. strategic TRIAD.

The strategic modernization program which has been outlined represents the first installment on a vital long term commitment to rebuild our military strength. As some of you may know there are those that would criticize this bold and aggressive plan, stating that by building more sophisticated weapon systems we are provoking an arms race with the Soviet Union, an arms race without reason, carried upwards by its own momentum.

cont. on pg 26



The Cavalry and Priorities

Maj Mike Howe
2 ACCS IP
Offutt AFB

This summer marks the tenth anniversary of my upgrade to aircraft commander. I'm not that old, mind you, I was one of your basic 750-hour wonders. To be honest, when upgraded, I probably wasn't ready. In fact, my first crews were as much leadership laboratories for me as anything else. Looking back, most of my problems were caused because I did not have a good system of leadership priorities.

I found a way to solve my priority problem from the old U.S. Army of a hundred years ago. Besides aircraft, I like history, horses and soldering.

The U.S. Cavalry holds a special fascination for me. In the late Nineteenth century they probably had the finest corps of light dragoons anywhere in the world. Like today's SAC AC, the old time cavalry officer was given resources, men and horses, and sent off to complete his mission. Command and control was not what it is today, and the regulations were not as extensive or sophisticated; so while on patrol, the cavalry officer had little guidance. What he did have was a set of priorities that were by then a tradition of the horse soldiering profession. His priorities, called the four M's were these: ***mission, men, mount and myself.*** By these priorities he lived his life, and with these priorities he successfully carried out his duties. They worked for him and they can work for you.

The ***mission*** was the first priority for the cavalry officer and mission remains the first priority of the aircraft commander. To me, there are three levels of mission. First, there is an immediate mission: tasks you have been assigned that will be completed in the near term, such as flying a training sortie or serving an alert tour. The next mission level is the intermediate mission, and constitutes overall duties you incur as crewmember. Examples of an intermediate mission might be supporting a tanker task force, completing quarterly training and establishing an acceptable record of launch reliability. Ultimate missions are the third and highest level of mission and are the end result for which the Air Force created you and your crew. As a tanker pilot I had two ultimate missions. In peacetime it was to train myself and my crew to safely operate the KC-135 aircraft from any suitable location so as to provide timely, worldwide air refueling support to any receiver aircraft under any conditions. EWO was the other ultimate mission. Simply stated the EWO mission is to accomplish the assigned mission regardless of cost.

Men are your second priority. Your duties toward your subordinates are the most gratifying and at the same time the most difficult. Your people are important. Without them you cannot accomplish the mission. You have two responsibilities to your crew: to train them and to help them resolve their problems.

In training, feedback is most important. Tell your people what you honestly think of their performance and their status as military professionals. Be candid, you owe them honesty. By all means, don't let them first discover your dissatisfactions on their performance reports.

Mount. To the best of my knowledge, the Air Force does not have any horses. We do have military working dogs. Interestingly enough, dogs are considered equipment like an APU, and given a national stock number to identify them. I'm sure the same would be true of horses. Therefore, when we talk about your mount we are referring to the physical resources you are given to accomplish your mission, the most expensive of which is your aircraft.

Your aircraft deserves your tender loving care just as much as any horse. Like the cavalry officer, you are fortunate to have a staff to care for your mount, i.e., the maintenance organization. Assure that your aircraft gets the attention it needs by effectively communicating any discrepancies to maintenance. The maintainers work longer and harder than just about any one else, so make their job as easy as possible. Like the cavalry officer, you must care for your mount before you sleep, even after a 15-hour mission.

Myself. General MacArthur said "Ours is a profession of arms." The military is a profession with grave responsibilities that encompass the very issues of individual life and death and the survival of a people. The ethics of our profession are best expressed by the motto of West Point: Duty, Honor, Country. Our's is a profession that demands a total and uncompromising commitment.

There are actions you can take to improve your ability as an aircraft commander and your professional status as an officer. Unfortunately, some of these actions have been reduced to square filling exercises. I am talking about graduate education and professional military education. If these are taken seriously, you can gain communicative skills and management techniques that will not only enhance performance of your present duties, but will prepare you to assume greater responsibilities.

All aspects of leadership require judgment, especially when applying the four M priority system to a given situation. Generally, the four M's in the order listed will be valid, but there will be times when a lower priority will dominate over the rest. For example, priorities for an inflight emergency during peacetime might be men, myself, mount and mission. Illness of a crewmember would also be a dominant consideration. The key to using the four M's is to justify to yourself why you would violate the priority system if you felt you must.

I think you'll find the Cavalry Officer's Four M Priority System useful. Think about it. Accomplishment of any assigned mission, concern for the well being of your crew, care for the government resources assigned to you and seeking of self-improvement are not just leadership priorities, they are a total concept of duty.

Life After Navigation

Capt Thomas D. Brown Jr
340 BMS, Blytheville, AFB

Is there life after Navigation? This is a question that every navigator must answer sometime in his career. Many talented and aggressive young navigators come to operational units each year. They arrive at the unit with a positive attitude and are prepared to work 18 hours a day, spend several days each month away from their families, and perform under the pressures of no-notice exercises, inspections, check-rides, and certifications. Unfortunately, this attitude is not always maintained. After about a year in the unit, their drive and aggressiveness turn to frustration. They perceive that all their work is for nothing; because the promotion potential for a navigator appears non-existent.

They see the poor percentage of navigators being selected for higher rank. They see a high percentage of wing staff navigators being passed over for 0-5. They see pilots in all of the key command positions in the wing. They see no opportunity to manage people. They see a non-existent rated supplement. To top it all off, they see a shortage of navigators that promises a future of longer days, more time away from their families, and the necessity to do more with less. If this is their total picture, it is easy to see why so many young navigators are frustrated.

But this is not the whole picture. There is more to getting promoted than percentages or job title. Officers are promoted based on "officer effectiveness", not job title. The Officer Effectiveness Report (OER) is the primary means of evaluating an officer during a promotion board. The OER is used to identify officer effectiveness. It is not just an indicator of job performance. Job performance is an important part of an OER, but officer effectiveness is much, much more. If navigators are to ever outgrow the "technician" label, we must be effective officers as well as outstanding navigators.

What is officer effectiveness? It is many things and there is no checklist for becoming an effective officer. However; here are some officer effectiveness qualities that a promotion board will look for in an OER: 1) Has self confidence. 2) Has the ability to plan ahead. 3) Gives careful consideration to every aspect of the problem. 4) Is well organized. 5) Is cool and calm under pressure. 6) Is impressive and convincing. 7) Has an exceptionally good grasp of the "big picture". 8) Has a positive "can do" attitude. 9) Is perceptive (sees what needs to be done and does it). 10) Has the ability to motivate young officers to positive thinking. 11) Duty performance should emphasize initiative, aggressiveness and innovative ideas. Emphasis should be given to performance and effectiveness above and beyond assigned duties.

The next time promotion percentages are published, don't look at the percentage of navigators or pilots or non-rated officers that are selected. Instead, look at the percentage that meets the above criterion for officer effectiveness. If navigators are not being promoted, it is because they are not meeting the above criterion.

Of the eleven officer effectiveness qualities listed above, none are impossible for a navigator to achieve. Officer effectiveness can't be achieved without aggressively and purposefully striving to achieve it. This is true for all officers, not just navigators.

It is true that pilots seem to have an advantage in the operations side of the Air Force. They have a better chance of getting the key command positions in a wing. It is also true that only a small percentage of pilots will ever advance to those jobs. The pilots that do progress into those jobs will start by being exceptional at their jobs and then excelling in the officer effectiveness qualities.

Operations is only a small part of the Air Force, especially when you look at the total number of slots for 0-6 and above. Navigators must get out of wing level operations sometime in their career if they expect to be promoted above major. But the same is true of pilots. Look at the pilots in your wing that have progressed to 0-6 and above. You will see that they have gotten out of the cockpit and then returned to operations. They did not make 0-6 sitting in an airplane and neither will you.

How can a navigator get out of the cockpit and get a promotable job? A navigator will have to do it the same way the pilots do! Start by becoming the best navigator in the wing. Then, work on the officer effectiveness part of the picture. Upgrade to instructor, get to Stan-Eval, upgrade to radar navigator, complete your PME, get your Masters Degree, etc. Then, as you get close to completing your gate time, decide where you want to go. This will depend on your educational background, work experience, and personal desires. There are many options available: AFIT, ASTRA, UNT Instructor, CCTS Instructor, and Higher Headquarters jobs to name a few. You can even get an additional AFSC while you are still flying. Talk with your career monitor at MPC, CBPO, and other experienced officers to get an idea of the types of jobs available. Pick several jobs that interest you, this will allow for a better chance of success. Then, WORK to get those jobs. Find out what qualifications are required for the job. Get qualified! Find out how the selection process works for each job. Get on the phone and talk to the people who make the selection. Find out what they are looking for! This is where the qualities of an effective officer really pay off. Be aggressive, plan ahead, and give careful consideration to every aspect of the problem. It won't be easy, but it is not easy for anybody in any career field.

If you become an effective officer and make positive efforts to get where you want to go, you will find that you are no longer a "technician". You will discover that there is indeed "LIFE AFTER NAVIGATION".

THE HAPPY WARRIORS

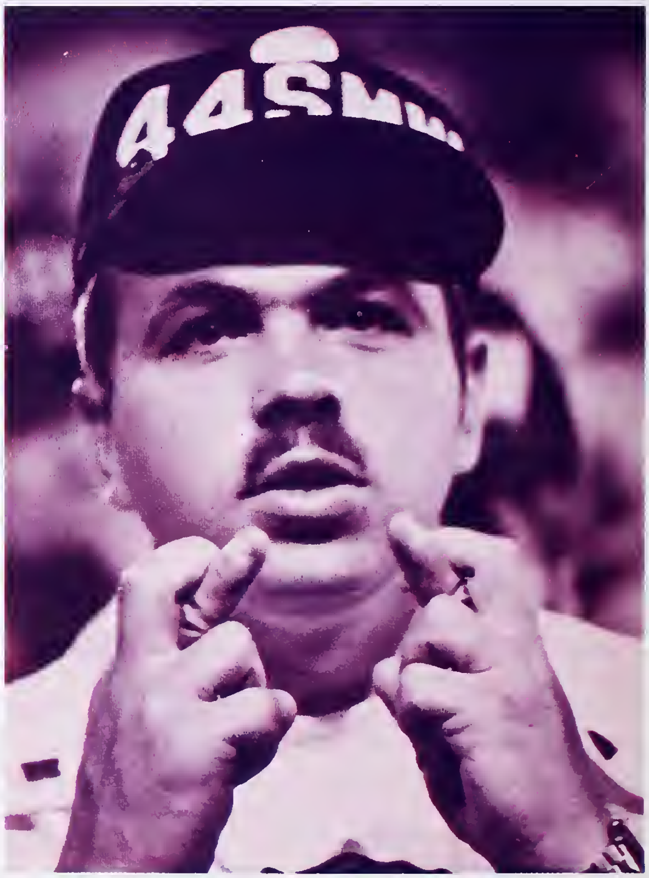
For the second time in the 15-year history of the SAC Missile Competition, the 44th SMW won the coveted Blanchard Trophy and top honors in the annual meet at Vandenberg. They last won the trophy in 1970.

The 44th, Ellsworth AFB, known as the "Black Hills Bandits" led in overall points from the second night of competition and came away one-tenth percentage (or one numerical point) ahead of second place competitors from the 381st SMW, McConnell.

The Blanchard is awarded annually to the best missile wing in the Strategic Air Command. It is named after Gen William H. Blanchard, the late vice chief of staff of the Air Force. Selection of his name for the trophy was based on his long association with SAC. It was during his assignment as director of operations, SAC, that the ICBMs first entered the SAC weapons inventory.

This year's winner, led by Col Joseph L. Stone, Sr., received the trophy from SAC commander Gen Bennie L. Davis during ceremonies at Vandenberg.

In addition to taking the top trophy, the 44th also received top honors as the Best Minuteman Wing and the Best Missile Operations overall.



Score posting at the 15th Annual Missile Competition could be suspensful. (Photo by A1C Eric C. Baker)

Col Joseph L. Stone, Jr., commander, 44th SMW, Ellsworth AFB, is hoisted to the shoulders of team members after the wing won the Blanchard Trophy in SAC's 1982 Missile Combat Competition. (Photo by SSgt Gary Loepke)

Other unit trophy winners and their categories are: Best Titan Wing, 381st; Best Missile Maintenance, 308th, Little Rock AFB; Best Missile Communications, 390th, Davis-Monthan AFB; Best Missile Civil Engineering, 351st, Whiteman AFB; Best Security Police, 381st.

Crew awards went to the 341st SMW, Malmstrom AFB, for the Best overall and Minuteman Crew; and the 381st for the Best Titan Crew. Malmstrom's "Wranglers" won the Best Minuteman Pneudraulic Team trophy; Whiteman's 351st won the Best Minuteman Periodic Maintenance Team trophy; from North Dakota, Grand Forks' 321st SMW took the trophy for the Best Minuteman Electro-Mechanical Team, and the 341st earned the Best Minuteman Munitions trophy.

Trophies were also awarded to the 321st for having the Best Minuteman Communications Team; 308th for the Best Titan Civil Engineering Team; and the 90th SMW, F. E. Warren AFB, for the Best Minuteman Security Police team.

The 381st took top honors in Titan Electronics; the 308th "Razorbacks" took Best Titan Pneudraulics; and the 390th "Roadrunners" had the top Titan Munitions team.

The trophy for Best Titan Security Police Team went to the 381st, while the 351st garnered the top Minuteman Civil Engineering Team award. Crew S-225 from Malmstrom took top single crew exercise honors.

Col Stone said, "We have completed one of the most rigorous missile competitions that I have seen or competed in. Each of the teams were super. We were very fortunate; we trained very hard, and our young people won." He also indicated that the "Bandits" were ready to compete to retain the Blanchard next year.

Out of a possible 3,000 points, Ellsworth's final score was 2,675. The 44th also received an Air Force Association award for Minuteman operations, while the 381st from McConnell earned that organization's award for Titan operations. Other awards included the Air Force Logistics Command for Titan Logistics, which was won by the 308th, and the AFLC Minuteman Logistics award, taken home by the 341st.

THE CUTTING EDGE

MISSILE PROCEDURES TRAINERS

Major Francis E. Sobotka
3901st SMES, Vandenberg

Over the years, there has been a lot of publicity given to aircraft simulators and the vital function they fulfill as highly cost effective training aids for our rated personnel. It is not as widely known that missile combat crew members also undergo a major portion of their initial qualification and recurring training in simulators. These missile procedures trainers, or MPTs for short, provide missile crew members a very realistic representation of an operational launch control center in which they can undergo training and evaluation in all aspects of their alert responsibilities. Today, the Air Force owns 27 MPTs valued at over $175 million. These trainers are located at each of the nine strategic missile wings and at the 4315th Combat Crew Training Squadron at Vandenberg AFB.

The Minuteman trainers utilize Sperry Univac Microprogram Control computers and associated control panels to provide simulation of virtually every conceivable scenario a missile crew member may have to deal with in an operational launch control center. The Titan II trainers offer similar capabilities without the benefit of a programmable computer.

In the MPT, missile crew members are trained and evaluated on a range of tasks that cover the gamut from the routine to the extraordinary. During a typical three hour trainer "ride," crew members are required to perform routine alert procedures such as crew changeover, equipment checks and the processing of maintenance teams on and off the missile sites. In addition, they must demonstrate their proficiency in much more serious and complex procedures — fighting fires in the launch control center, restoring site monitoring capabilities and carrying out emergency war orders to launch their ICBMs. Whether or not the crew reacts correctly to the status they are presented, the MPT will provide the identical indications their actions would produce in an operational launch control center.

The actual operation of the MPT is the responsibility of the trainer operator. He must not only insure that the trainer performs as programmed, but he must also act out the roles of the many agencies with whom missile crews regularly interact. One minute he is a maintenance technician, the next he may be the wing commander. Always, he must insure his actions do not prompt, assist, confirm or correct any action the crew may take; yet, he must still provide realistic responses. Obviously, the missile procedures trainer operator must have an above average knowledge of the weapon system, crew EWO procedures, and the workings of the trainer itself. It is not unusual for an MPT operator to have to intervene several times per session in some magical way to insure the 1950's technology of the trainer functions correctly in the 1980's.

During 1981 alone, over 113,000 hours of MPT time were logged throughout the command for training and evaluation purposes. Such a demand requires team work from the unique blend of operations and maintenance personnel who comprise the typical MPT branch. This branch, which is functionally located within the operations deputate, is made up of a branch chief, five trainer operators, all of whom have had missile combat crew experience, and six maintenance technicians who carry a 341X7 AFSC that is totally unique in the Air Force.

The busy operating schedule of the MPTs places an especially heavy burden on the maintenance technicians responsible for the trainers' upkeep. These technicians must provide 24 hours a day, seven days a week maintenance service that ranges up to depot level repair. In addition, since they are not part of the maintenance deputate, they are responsible for their own scheduling, bench stock, supply, quality control, training and extensive technical order library. The fact that MPTs maintain an in-commission rate of over 95% is a tribute to the ability and dedication of MPT maintenance personnel throughout SAC.

As with any system, the Minuteman and Titan II weapon systems have undergone numerous modifications over the years. To insure that MPTs realistically simulate the alert environment, they have had to undergo corresponding modifications to their hardware and software. Currently, MPT modification programs costing in excess of $6 million are underway. Among the most recent are the Ground Maintenance Status Response and the Command, Control and Communications (C^3) modifications for the Minuteman trainers and the Radio Type Maintenance Network modification for Titan trainers. From initial modification design to actual installation, each of these modifications requires extensive coordination among numerous contractors and several major commands. The agency responsible for orchestrating such efforts is the 3901st Strategic Missile Evaluation Squadron.

While the 3901 SMES is known primarily as SAC's missile evaluation agency, the MPT branch within this squadron also serves as the command's single point manager for all MPTs. Staffed by one officer and five NCOs with extensive MPT experience at the unit level, this office interfaces with the user units, equipment manufacturers, high headquarters and other major commands. The branch is entrusted with the responsibility of insuring that projected MPT modifications are practical, technically sound and cost effective. To achieve this goal, branch personnel have averaged over 500 man-days a year on command management TDYs to various design reviews, kitproofs, technical order

cont. on pg 13

ARE YOU A PRO?

Capt Clinton W. Pate
920th AREFS

It's been over two and one-half years since CCTS and as I approach upgrade, I reflect on what helped me most as a copilot. I found that preparation, research, and organization prior to a flight contributed most to a successful mission. I'd like to offer some of my suggestions on becoming a PRO copilot.

Let's begin with the copilot's bible, the Dash 1. This piece of literature is one of the most important and useful manuals that you will come across. There's a vast amount of material but if it's utilized properly, it can be easy to reference and study. My first recommendation is to highlight all cautions, warnings, and operating limitations (sect. V). In addition, it would be worthwhile to highlight the mission flight plan, form 200, use of oxygen and pressurization, and altitude calls portions in the crew duties section VIII. These highlighted items are frequently used and this makes it easier to reference and study.

My next recommendation to a new copilot would be to place a quick reference guide on the inside covers of the Dash 1. On this guide should be the page number of sections frequently used or necessary in a time of emergency. Placing tabs on these reference pages also helps in locating them. I recommend that you quick reference the following sections.

- Bold Face Procedures
- Electrical Systems Emergency Procedure Charts
- Hydraulic System Emergency Procedures Charts
- Cabin Air Conditioning Pressurizing, and Ventilating Systems Emergency Operation
- Warnings Flags and Corrective Actions in section VI
- Oxygen Duration Chart
- Brake Limitations
- Mandatory Form 781 Entries
- Summary of Practice Approach to Initial Buffet
- Aircraft Trim Procedures
- Engine Malfunction Analysis Chart
- Electrical Operational Loads
- Generator Manual Paralleling
- Standard Fuel Load Charts
- Turbulence and Thunderstorm Penetration Procedures

Beyond the Dash 1, I recommend that you make some alterations to your Performance Data, Air Refueling, and INS/DNS manuals. Highlight the cautions and warnings (in the Performance Data manual), along with important chart heading information such as wet vs. dry or 20 degree flaps vs. 30 degree flaps. This will help prevent using the wrong chart and embarrassing yourself, busting a checkride, or worse. In addition, penciling in the assumed runway available line on the temperature scale of the Reduced EPR for Runway Available charts will save time when corrections need to be made. As a last aid in the performance data manual, tab each section for easy reference. I also recommend highlighting the cautions and warnings in the Air Refueling Manual and the Aircraft Mission Planning and Inflight Data Charts for quick reference when needed. Finally, highlight the cautions and warnings in the INS/DNS manual and tab the inflight procedures pages in section VIII.

Besides the modifications to manuals, I've also adopted aids to help me utilize my checklist. I suggest that you obtain some smooth, clear contact paper and place a strip of it over the left-hand side of each page cover. By using a grease pencil to check off completed items, you'll never forget to accomplish any item, and the grease mark can be easily wiped off. I also penciled in instructions from the amplified checklist in section II of the Dash 1. This abbreviated amplified portion helps to jog the memory after long layoffs, like leave. You may also want to pencil in "checklist complete" after each checklist. This always helped me to remember to call the checklist complete. You may also want to place plastic strips over the landing data card. This makes it much easier to make corrections. As a final aid to the normal procedures checklist, place tabs on the bold face procedures pages for quick reference.

For the performance data checklist, I've placed tabs in the important and frequently used charts. I'd suggest that you place tabs on the following:

- **Changes Takeoff Conditions Charts**
- **TRT, NRT, MRT, Touch and Go, and Go-Around EPR Charts**
- **Fuel Management Sequence Chart**
- **Holding Speed Chart**
- **Runway and Crosswind Component Charts**
- **Threshold and Approach Speed Charts**
- **Landing Inflight Minimum Control Speed Chart**

As a last aid, I've also placed a strip of contact paper over the Air Refueling checklists to allow me to check off these items as they are completed.

As a new copilot, you've probably noticed your IP or PUP at Castle carrying a binder they called their "Plastic Brains." It's never too early to start acquiring your own set of "plastic brains." I started mine at Castle by borrowing my IP's set and photocopying material I thought would be useful. Since that time, I've acquired much more material and periodically edit mine to insure it is current and useful. As a brief example, I have the following information in my plastic binder:

- **SID**
- **Summary of INS Techniques**
- **Local Assumed Runway Available Chart**
- **Oxygen Requirements Chart from 60-16**
- **Local and HF Frequencies**
- **Local INS/DNS Coordinates**
- **Air Refueling Turn Ranges and Timing Requirements**
- **Mission and MITO Briefing Guide**
- **Maintenance Brevity Codes**

This is just a portion of the items in my collection. Put anything in it you feel would be useful.

Besides keeping a set of "plastic brains" I've also constructed a permanent laminated map. Prior to laminating the map I drew in the most frequently used A/R tracks from my base, as well as emergency airfields, and all major navigation aids. The time you spend preparing such a map will be well spent. I've had mine for several years and it's come in handy especially with airborne flight plan changes. After a mission I merely wipe off the old route and it's ready for the next flight. However, for those of you who don't want to go to the trouble of making a permanent map, I suggest you save your old ones. They can be used over and over by drawing in the routes with a different color each time it's used. I use this technique myself with infrequently used A/R tracks.

Probably the most important piece of data you will compute as a copilot will be the form 200. Remember, the "200" is your summary of how the mission will be flown. If it's utilized properly, it can act as an action point guide for the whole flight. Used improperly, the "200" can be just another piece of paper in the mass of paperwork necessary for flight. I suggest that you keep accurate notes on the figures you used in computing the "200." This helps avoid redoing a lot of unnecessary work if changes or mistakes are made. Be sure that you annotate all the fuel computation considerations in the remarks section of the form 200. This makes it easier for someone checking your work to reconstruct what you've done. I also recommend that you highlight the fix coordinates, mag headings, altitudes and airspeeds, and times when fuel readings need to be taken. This highlighting allows you to extract necessary information at a glance. On the back of the form 200, besides filling in the remarks section, I add several other items. I make a column for fuel readings consisting of planned fuel, actual fuel, difference

cont. on pg 13

PRO

cont. from pg 12

between planned and actual fuel, engine shutdown, beginning A/R, end offload, and end A/R. I utilize the bottom of the back page to keep a log of the tail numbers and wet vs. dry contacts for each receiver.

The next most important piece of information besides the form 200 is the takeoff data. I would suggest that you don't compile takeoff data until as close to takeoff time as possible. I don't mean the last minute. For example, if I'm flying early in the morning I'll call weather the night before the flight. The closer this call to takeoff time, the less chance of changes. Remember to allow ample time for computing the data. If the weather at takeoff will be marginal, I'll preplan maximum allowable gust, calm wind corrections, various RCR conditions, etc. This helps prevent panic when you're sitting at the hammerhead ready for takeoff and conditions begin to change. I also try to plan the takeoff for 20 degree flaps whenever possible, as this allows the greatest pad for weather condition changes, particularly calm wind corrections.

Most of the techniques or hints I've offered you so far have been oriented towards preparation and research. The last point I'd like to make concerns organization. In order to keep myself organized during the flight I maintain a clipboard with the important mission paperwork on it. During briefing at base operations I place my paperwork on the clipboard in the order it will be utilized during preflight or flight:

- **Fuel load sheet out of the 781**
- **Form 200**
- **Form 365F**
- **Inflight Data Sheet**

In addition, I've taped a piece of light colored paper on the clipboard and laminated this. I use this to write down important notes prior to the flight and 781 writeups during the flight. Keeping the clipboard by my side keeps the paperwork orderly and allows me to have the necessary information readily at hand.

Well, I've listed what I've considered to be important points in preparation, research, and organization prior to a flight. I can testify that they've worked well for me. A PRO approach to your duties can make the job easier, safer and contribute to a more enjoyable flight.

THE CUTTING EDGE

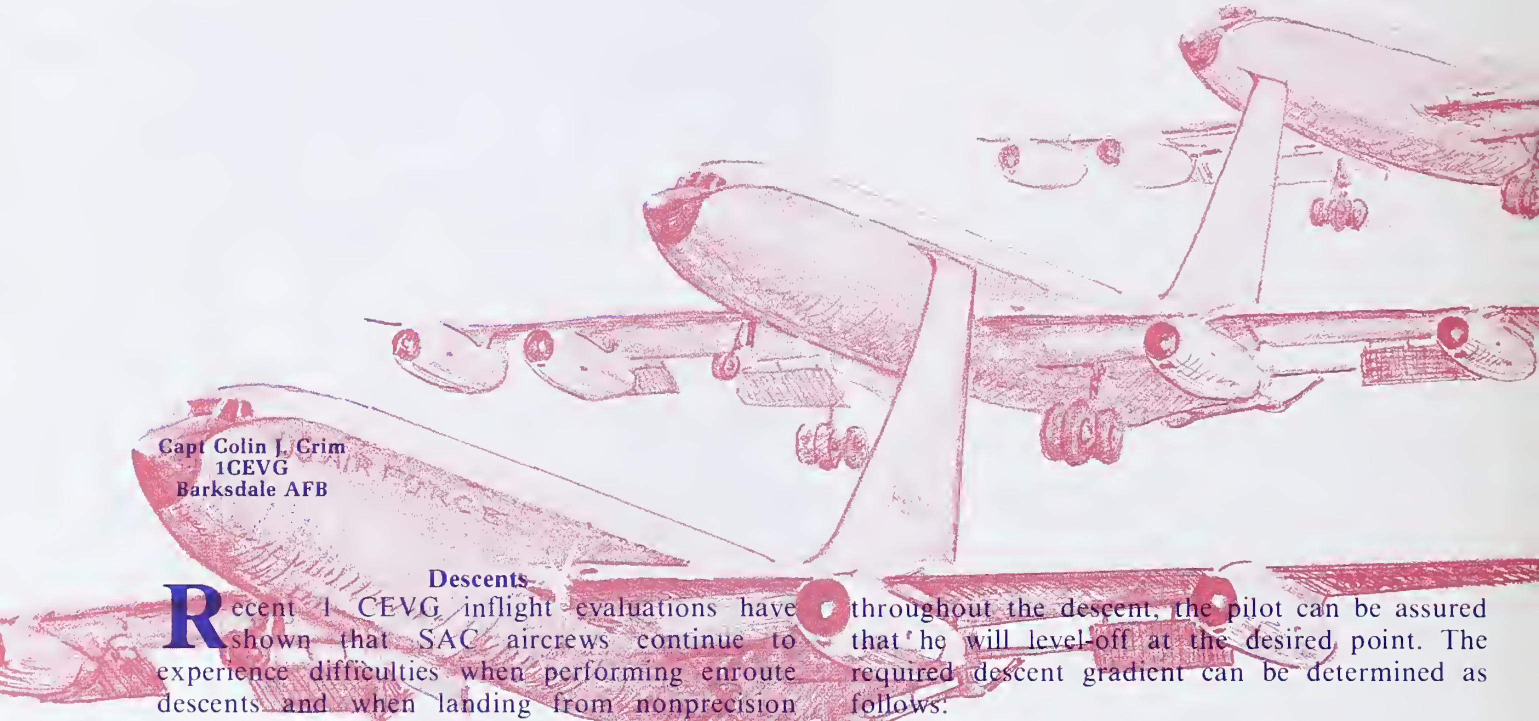
cont. from pg 10

reviews, technical interchanges, and provisioning conferences. Indicative of the essential role these personnel perform, they identified over 500 corrections that had to be made to contractor supplied data during a recent C^3 modification kitproof.

The 3901 SMES also hosts an annual MPT Workshop Conference for representatives from each missile wing, the 4315 CCTS, 8th and 15th Air Forces, Hq SAC, the Ballistic Missile Office of AFSC and the Air Force Logistics Command. This year's conference, which was held on 23-26 March, addressed over 80 agenda items ranging from maintenance and supply to procedures for training and evaluation. In addition, over 30 action items were identified. At a time when the MPTs are undergoing major modifications, this conference has assured that potential problems have been identified well in advance and that comprehensive plans for dealing with these problems have been developed.

The MPTs comprise a considerable Air Force investment that demands continuous effort and expense to operate and maintain. However, they are absolutely essential to the training and evaluation of our missile combat crews. In terms of the contribution MPTs have made to the military preparedness of our nation, these facilities represent a very worthwhile investment.

BIG "I"



Capt Colin J. Grim
1CEVG
Barksdale AFB

Descents

Recent 1 CEVG inflight evaluations have shown that SAC aircrews continue to experience difficulties when performing enroute descents and when landing from nonprecision approaches. Too many pilots executing enroute descents either level at a low altitude too far from the destination airfield, or they fail to level off early enough to properly configure the aircraft before crossing the final approach fix. The latter situation is especially prevalent when strong tailwinds are present during the descent.

The difficulties encountered in landing from nonprecision approaches are a result of late, steep descents from the MDA. These steep descents have frequently been observed from approaches with published Visual Descent Points (VDP's). Although both of these problem areas have been thoroughly discussed in past "Big Instrument" articles, it appears that a review of basic concepts and useful techniques are in order.

Enroute Descents

As pilots, we are not always offered the opportunity to begin our enroute descent at our computed or requested descent point. Additionally, winds, intermediate level-offs, and unexpected vectors during the descent have a way of disrupting even the best of plans. By periodically computing and then flying a required descent gradient throughout the descent, the pilot can be assured that he will level-off at the desired point. The required descent gradient can be determined as follows:

$$\text{Descent Gradient (ft/NM)} = \frac{\text{Altitude to be lost (ft)}}{\text{Distance (NM)}}$$

or

$$\text{Pitch Change (Degrees)} = \frac{\text{Altitude to be lost (100's of ft)}}{\text{(Distance (NM)}}$$

Using the computed descent gradient, you can determine the required vertical velocity (VV) as follows:

$$\text{VV (ft/min)} = \text{Descent Gradient (ft/NM)} * \text{TAS (NM/min)}$$

where

$$\text{NM/min} = \frac{\text{TAS (kts)}}{60}$$

or

$$\text{NM/min} = \text{mach} *10$$

With a little practice, periodic use of the formulas during the descent is easier than it first appears. You may have your own set of similar formulas, or even a different technique all together, but the important thing to remember is that periodic adjustment of the vertical velocity will be required during almost every descent. It is only by being aware of any changes to the required descent gradient, or of deviations from the planned profile, that the pilot can properly elect to change the configuration of thrust and drag devices.

Descents

To account for winds, either tailwinds or headwinds, simply substitute groundspeed for TAS in the formulas. Frequent recalculation will compensate for strong tailwinds, even if groundspeed is not used in the calculations. Using TAS, the required descent gradient would increase with each recomputation, prompting the pilot to further reduce thrust or use available drag devices. Recalculation is also a valuable aid each time the descent is restarted at an intermediate level-off altitude.

Descents At VDP's

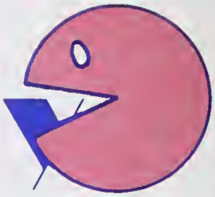
We all know that the VDP is a point along a nonprecision final approach where a normal glide slope to the runway intercepts the MDA. Computations for determining the position of the VDP, when not published, have been covered in several previous articles. Although aircrews have been exposed to VDP's for some time now, recent inflight evaluations indicate that some pilots still have misconceptions about the use of VDP's. During our evaluations we have observed steep final descents, long landings, and some unplanned missed approaches. All were caused by the pilot starting descent late.

The VDP is considered the last point at which a normal descent can be started. To begin descent at the VDP, the pilot must have already acquired the runway environment visually. Waiting until the DME indicates passage of the VDP and then looking outside for the runway will invaribly lead to steeper than normal descents or long landings. One should begin cross-checking for outside visual references upon reaching the MDA and, with sufficient visual cues, begin descent as the normal glide path is intercepted.

A DME indication of VDP passage is a good clue that you are passing through the normal glide path, especially when VASI's are not available or when visual reference with the ground is never established. Attention to the DME will help prevent descending too early from the MDA. It makes little sense however, to fly through a fully visible VASI indication of on glide path while waiting for the DME to indicate passage of the VDP. Using all available indications of glide slope interception, including VASI's and other visual cues, makes sense whether flying the approach in actual weather or under simulated instrument conditions.

Should you have any questions about this article or any other instrument matter, feel free to call us at Autovon 781-3648. The new Chief of the Instrument Division is Capt Rhett Cooper. Working under his capable supervision are Capt Colin Crim and Capt Bud Holland.

WE HAVE THE TECHNOLOGY



Capt Charles T. Vono
350 AREFS, Beale AFB

As the following article clearly points out, operations has not yet fully joined the "Computer Age." The SAC/DO personally shares many of the concerns expressed by Capt Vono. Consequently, an officer has been assigned to study and suggest solutions to some of the very problems mentioned in this article. The officer's first task is to provide a road map to serve as a guideline. The road map will be completed this summer and will address several of the issues raised.

Computers! First, we thought we were in the Atomic Age, and then we thought we were in the Space Age. Finally we were pretty well convinced that the Age of Aquarius had dawned. Wrong! Its the Computer Age, and after years of furious growth, the computer is approaching its infancy. Where does the crewdog fit into all of this? If you read Captain Berdahl's article in the February 1982 Combat Crew, you know of our desire to have the computer do our takeoff data, flight plans, weight and balance sheets, engine condition monitor graphs and much more. Why are we not now doing all this?

Right now, today, this minute, we could be allowing the computer to do what it does best, relieve us of clerical and computational tedium. We have the technology to put a list of all command directed events right at the fingertips of our operations officers. It would not be week old information, but current up to the minute status on all crews. The leaders and managers who need to know would have immediate access to check-ride dates, DNIF status, line badge numbers, home phone numbers, last landing dates and more. They would have immediate access sorted by last name, birthday, crew number or any other attribute. These systems exist now. They are in use now by private businessmen to reduce overhead and free the manager to manage and the leader to lead. With the limited resources we have to work with in the US Air Force, why do we not have these machines?

We have the technology, however . . . I will never forget the day that the computer age began for the 100th AREFW. I had stopped by the navigator branch to see Major Macleod, he's the chief of that branch and now instigator of many computer projects. But that day, he was as naive as any of us in the field of computer technology.

A navigator was sitting in front of what looked like a typewriter hooked to a television screen. He was, of course, running the celestial trainer. He was, in fact, the first crewdog navigator to run this simulation at our base. A crowd had gathered. "Hey! Do you know what this is?" I said excitedly. "That's a . . ." "Shhh!" said a navigator. "Quiet" said another. "He's working!" "Hey", whispered another. "What's a pilot doing in this office?" he was only half joking.

I waited a few more minutes to see what tremendous feats might occur from the screen of that computer. I took note of the printer and disk drive. I saw the brand name 'North Star'. This machine had more power and memory than a roomful of equipment had in the sixties. "It's a celestial trainer, Charlie" whispered Major Macloed. "We just got it in . . . it will let a navigator practice his technique without burning JP-4". "That is not a celestial trainer" I said, a bit too loud. "It's a computer with a celestial trainer program. It's a microcomputer to be exact . . . do you have any idea what this thing could do for us?" An idea struck me. It was an amazing thought, and one which has struck many a crewdog since: "Why, that thing could do takeoff data for us!"

When I said the word 'computer', several people with advanced cases of computerphobia got nervous. When I mentioned takeoff data they were incredulous. "That is not a computer" the first navigator said, his voice was a little more than a whisper. "It is a celestial training device, a CTD. A computer would be alot noiser." "And bigger" offered another. "You still here?" said the joker. "That" I said, pointing in the general direction of the printer which had just begun to spew paper, is a computer." "It could do takeoff data, fuel logs. . ." "So? Who cares?" "It can do more", I said, feeling a roll coming on. "It could do nav leg flight planning, forms F's, record keeping and even word processing. It could free Stan/Eval evaluators from the paperwork drudge. It could allow commander's secretaries to really be secretaries instead of typists. It couldn't write the schedule but it could be a real help to a scheduler in getting dates and names. Why it must be at least 64K. It's even got room for another disk. The possibilities are endless. You could hook it to a telephone line and exchange programs and information with other bases. You could . . ." But I had lost my audience. One by one, their eyes had turned from my extemporanious lecture back to the machine. I suppose they figured I was deranged. (Probably caused by straddling a radar antenna for hours at a time.) They all thought I was crazy . . . all but Major Macleod. He allowed me and other nuts to spend hours in front of the computer. We explored its capabilities and tested its limits. He arranged for a college instructor to teach us programming codes. A small cadre of volunteers formed. I was still the only non-navigator.

Programs were born. I wrote one to do takeoff data. Other bases were doing the same. We exchanged programs shamelessly. Incest was the byword. Many programs were real mongrels, but they worked. Then an amazing thing occurred. Nothing happened.

We have the technology. We had written the programs. We had proved that this little box could work wonders. We suggested additional purchases, formed computer working groups, talked bits and bytes over lunch every day. We had Operations Officers discussing the relative merits of hard and floppy disk drives. Secretaries were talking about word processors. Vendors displayed their wares. And still, nothing has really changed.

When a computer moves into a small company, a revolution occurs. People get fired or retrained. Costs go down. Efficiency goes up. Old conservatives complain until they understand the system, and then they are the first to show it off to the newcomer. Nobody remains unaffected. To this date, the average crewmember remains unaffected.

We have the technology, but not the vision. In an effort to supply some vision, the following guidelines are submitted to help other wings who are considering joining the "revolution".

Before we solve the problem, let's define it. How does your office really work? How should it work? How many people are needed? How many are just there to do paperwork? How many are needed for war? February '82's Nations Business (a business advocate magazine) ran an article "Managing the Electronic Office" which states: "Once the front office goes electronic, managers and professionals will have to redefine their work and restructure their organizations." This is wrong. The time to redefine and restructure is **before** the machine comes in. We must pick the right machine for the job and we will need the help of professional advisors (not vendors!) to do this.

Any new system must be user oriented. It must not be computer oriented. We must never be called upon to remember computer codes. Let the computer remember that R33N is a rendezvous on the Mission Accomplishment Report (MAR). Our printouts (or screen displays) should be sorted on whatever we specify. Along with this, we should never, never blame the computer. Behind every computer error stands a human being who actually made the goof.

Mathematical data, such as takeoff data, **must be verified.** This is a tricky business. Let's look at an example: If we try to verify the results of our program by simply matching answers we must decide what to match our answers to. If we try to match them up with another program, we simply are checking to see if one equation is similar to another, not if either has any bearing to the real world. If we check our data to the actual charts we are checking our calculated data against estimated data. Check your Performance Manual, most charts are **estimated**. Take it from someone who has studied these charts closely. They are not accurate. They are a collection of flight test data and computer simulation data estimated for the average tanker (or bomber) with average engines

cont. on pg 24

ALTITUDE ERRORS AFFECTING BOMBING

CFIC

Maj James P. McLaughlin
Capt Donald E. Jackson
CFIC, Castle AFB

How important is altitude to bombing? Most navs will say, "very important". Most pilots will say, "I don't know". Ask the navs how important "very important" is, and they will say, "I don't know". In this article we are going to discuss sighting and bombing errors caused by altitude errors.

In discussing altitude errors we have chosen a sighting altitude of 500′ for low altitude and 30,000′ for high altitude. In other words an altitude above target of 500′ low and 30,000′ high. We then computed the errors that would be caused by climbing 500, 1,000, or 2,000 feet without the release altitude in the BNS changing.

At low altitude the sighting error induced is almost insignificant. Those of you who hold the LACC switch to Calibrate the last 20 seconds of a radar synchronous run are probably wasting your time. The only time this pays off is on an EVS release. For radar synchronous bombing a 500′ altitude error makes only about 25′ of sighting error on a 2½ NM offset. If the BNS altitude was locked and the pilot climbed 2,000′ to remain VFR, the resulting error would be less than 200′ on a 2½ NM offset. Figure 1 sums up low altitude sighting errors.

LOW ALTITUDE SIGHTING ERRORS

ALTITUDE ERROR	Ground Range to Sighting Point 20NM	10NM	5NM	2½NM
500′	3′	6′	12′	25′
1,000′	8′	17′	33′	66′
2,000′	25′	49′	99′	199′

Figure 1

Low altitude ballistic errors are more significant than sighting errors if you are dropping a real bomb. Figure 2 shows the error induced by flying 500, 1,000 or 2,000 feet higher than the correct release altitude above target, based on MB-4 ballistics, 500′ release altitude above target, and 340 knots TAS.

LOW ALTITUDE BALLISTIC ERRORS

ALTITUDE ERROR	BALLISTIC ERROR
500′	436′
1,000′	601′
2,000′	801′

Figure 2

HIGH ALTITUDE SIGHTING ERRORS

ALTITUDE ERROR	Ground Range to Sighting Point 20NM	10NM	5NM	2½NM
500	124′	249′	502′	1,032′
1,00	252′	504′	1,021′	2,163′
2,000	512′	1,029′	2,114′	4,860′

Figure 3

It should be noted that the above errors do not apply to an STR score. The STR site will use the same ATF that you have locked in the BNS (7 seconds for 500 HF) regardless of your actual altitude at release. For you pilots this does not mean that altitude is unimportant, remember we are training for EWO.

We have all heard about the "foot for foot" rule for computing high altitude sighting errors. Basically, it says that for every foot of altitude error you have you will get a foot of sighting error. This rule is pretty good at bombs away for a high altitude release. Figure 3 shows that 500′ of altitude error produces 502′ of sighting error at 5NM ground range. For a high altitude release we are about 5NM back from the target at release. But what about a SRAM fix at 10NM ground range? Figure 3 shows the sighting error is only about one-half as much as it would be if you took the fix at 5NM. Would anyone like a "one-half foot for foot" rule?

The last thing to note about high altitude sighting error is the huge increase in the 2½NM column. It is pretty hard to get the tilt down enough and tune the scope to take a SRAM fix at 2½NM ground range, but if you can do it, your altitude becomes critical.

Next we come to high altitude ballistic errors. The old "one-half foot for foot" rule is close in this case also. Again this applies to an actual release. However, it may also apply to a STR release. Most STR sites will use their measured altitude to compute your ballistics unless you provide them with release altitude above burst and request they use it to compute ballistics. Again, we would like to note that we are training for EWO. Do a good altitude measurement prior to your high run and then you will not have to worry about what the STR site is using to compute your score.

So how does it all tie together? Low altitude sighting error is not very significant unless you are using EVS. If you are high, a real bomb would hit long due to ballistics. This one the pilot controls by flying the proper TA altitude.

High altitude, sighting and ballistics both get you. If the aircraft is higher than computed, the sighting on a show target will cause the bomb to hit long. Unfortunately, the ballistics will also cause the bomb to be long. If we were sighting on an offset off the left wing with the aircraft higher than computed, the bomb would hit left by the amount of sighting error and long by the amount of ballistics error.

Remember, foot per foot, half a foot per foot, or one foot in front of the other foot, if you drop 'em from the right altitude, they will hit the right spot.

MANHOOD VS SAFETY

First published in **Combat Crew**, June, 1967.

Chaytor Mason
University of Southern California

One of the curious curses of our culture is the conclusion that anyone interested in his own safety is far too frightened to play the game well or give the job its fullest measure and therefore should be sacked on the spot.

This is a sad but realistic truth relating to man's own appraisal of manhood.

When it comes to "being a man," the average proud male cannot satisfy himself with buckling his biceps.

Some secret spark of pride also directs that, should the occasion demand, the man also will be willing to conduct himself like an utter boob, disregarding all precautions — expressed or implied — in the performance of almost anything that will prove he isn't a sissy.

We lost a lot of good men that way. And some of the characters classed as sissies, because they have at least a small regard for their own skins, manage handsomely to survive, live to see another day, and in the process contribute magnificently to the total goal.

This seems to be today's unsatisfactorily unsafe story of safety education — be it flight safety, highway safety, or even something as relatively minimal as household safety.

Let's flash back a few years: The first match game of baseball was played in Hoboken, N.J., in 1846. It was a bare-handed game. The first teams played with the same hard-rock ball used today. But the baseball glove hadn't been invented. Caught with bare hands, the ball broke hands and split thumbs. Not every catch was a lucky one.

And so it went along its maiming way for 25 years, until, on one sunny day, Charlie White, first baseman for Boston and tired of sore hands, came onto the field wearing a thin, but nonetheless protective glove. He never got a chance to use it. He was laughed off the field with a chorus of catcalls: "If ya that scared of th' ball, don't play." . . . "Catch the ball, don't MUFF it." Gloves were not worn on an American baseball diamond for another five years. And baseball went through the same time trials in the evolution of a catcher's mask, a chest protector and even today's hard hat.

Football, you will remember, fared no better in the development of "safety appliances." You also may recall that it has been only a few years since one of these bits of evidence for superior manliness was the cool defiance demonstrated by a quarterback heaving his heavy helmet heavenward. Now there was a MAN who would lead the team to victory, the fans said.

No matter the game, the story has been essentially the same. You saw it in baseball, football, hockey, boxing — or that grimmest game of all — war.

Even in war the development of life-protecting headgear, garments and even practices historically has been considered a vile form of cowardice — unmanly and even unpatriotic!

Let's look at the record for a moment. In the American Revolution, the soldiers of his Brittanic majesty, George V, wore brilliant red coats and white pants and marched in bold, shoulder-to-shoulder formations against the sharpshooting guerrillas of the day.

The Redcoats never really got the idea.

And about 140 years later the French Poilus and the British Tommy Atkins were again marching off to war wearing crimson hats of cloth. Without so much as a change of uniform, they moved from the sidewalk cafes in Paris to the battlefront.

With little more ado, they faltered and fell before the machine guns of the Germans — who happened to have been wearing very hard hats at the time.

Resistance to hard hats and the protection they afford were not necessarily a solider-of-the line idea. Despite directives from superiors, local commanders resisted trading off the bravado of the bright and soft hat for the dull steel helmet. One British commander went so far as to declare that anyone in his command who wore a hard hat would be court-martialed on the spot for "cowardice in the face of the enemy."

It was just another case of a man trying to prove that he — as well as those in his command — weren't sissies and could firmly establish their manliness just by flaunting safety!

Come to think of it — have you ever seen a picture of World War I's Black Jack Pershing or World War

cont. on pg 26

PROFESSIONAL

FLYING CREW

Crew R-19 was returning to Loring AFB following an off station training mission. As the heavyweight B-52G reached unstick speed, the pilot observed number three engine losing power. After landing gear retraction, the tower reported sparks coming from the engines. The pilots, after a visual check, discovered a fire burning through the cowling of number three engine. The pilots performed the bold face for engine fire during flight. After flap retraction, the fire warning light for engine number three illuminated and the adjacent engine in the nacelle was also shut down. With fuel cut off to the burning engines, the flames slowly dissipated. As the pilot team extinguished the fire, other crewmembers coordinated with the command post for a safe recovery and backed the pilots up with dash one procedures. After containing the fire and terminating the emergency the crew prepared for a six-engine landing. Postflight investigation indicated the the fuel manifold ruptured, causing a rupture in the diffuser case of the number three engine, dumping burning fuel into the bottom of the engine pod. The quick, decisive actions of the crew prevented further damage and allowed a safe, professional recovery. Crewmembers include: Major Jack Strickland, pilot; Captain Earl Richardson, copilot; Major Henry Niedorf, radar navigator; 1Lt Keith Wagner, navigator; 1Lt William Foote, EWO; SSgt Kevin Newman, gunner; SMSgt Jerry Nations, instructor gunner; and Captain Glenn Graber, instructor radar navigator.

MISSILE MAINTENANCE AIRMAN

SrA Teddy B. Hoskins, 308th SMW, Little Rock AFB, is the SAC ICBM Maintenance Airman of the Month. He is a propellant servicing component repair specialist responsible for maintaining extremely critical and highly technical equipment required to support the TITAN II missile propellant transfer system. He has been repeatedly recognized for his outstanding contributions and high standards; during the last 3901st SMES visit he was one of only two in the wing to receive a Certificate of Excellence. He was also named a Professional Performer during a recent local operational readiness inspection. SrA Hoskins' performance is always characterized by a constant display of the highest degree of professionalism. His achievements are the result of perseverance, management skill, military pride and willingness to put forth that extra effort to insure the expeditious completion of any task.

FLIGHT MAINTENANCE AIRMAN

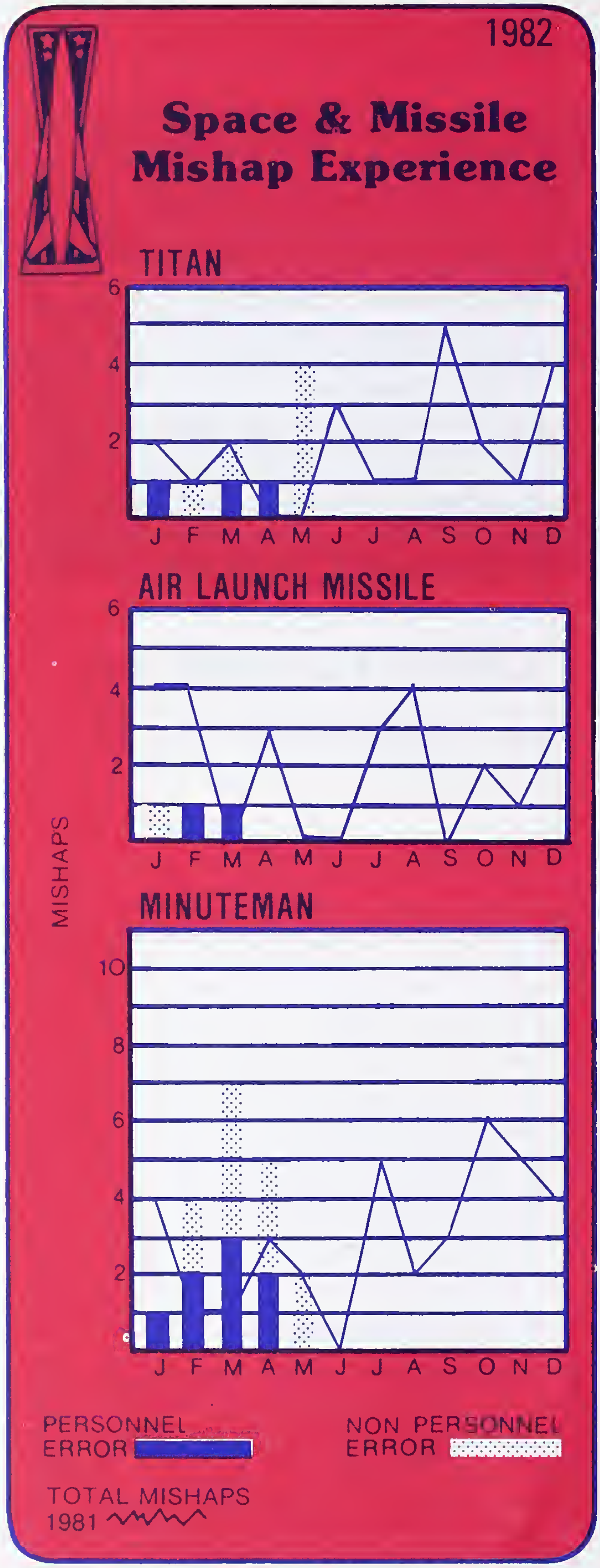
TSgt Bernardo Fuentez, 43d MMS, Andersen AFB, is SAC Maintenance Airman of the Month. Sgt Fuentez demonstrated exceptional technical ability, leadership and initiative in the munitions maintenance and storage branch. After identifying numerous explosive safety waivers that were in effect, but avoidable and creating a potentially hazardous situation, he designed and implemented a project which resulted in the rescinding of all such waivers.

He is truly a professional NCO and a valuable asset to the SAC maintenance effort and the United States Air Force.

MISSILE CREW OF THE MONTH

The 308th SMW, Little Rock AFB, Crew R-117, Capt Stephen G. Payne, MCCC; Capt David C. Gillman, DMCCC; SSgt Norman C. Crouch, Jr., MSAT; and Amn Thomas W. Nelson, MFT, is SAC Missile Crew of the Month.

The crew performed with the utmost safety during a dangerous oxidizer leak at a TITAN II launch complex. The leak occurred when a propellant transfer system maintenance team attempted to repressurize stage 1 missile oxidizer tank. The team had donned rocket fuel handlers clothing outfits before starting the operation. The tank pressure began to decrease and the crew received an indication of oxidizer vapor launch duct. Crew R-117 safely evacuated all personnel as the oxidizer parts per million readings on the vapor detector annuniciator panel continued to rise. Meanwhile, they coordinated with the missile potential hazard team, PTS maintenance, and Martin Marietta engineers to correct the problem. The PTS team received permission to disconnect the missile vent quick disconnect and replace the airborne pressure cap. These actions corrected the leak and the crew initiated purge to dissipate the oxidizer vapors. Crew R-117 performed with precision during this potentially hazardous situation. In addition, their outstanding performances during job proficiency evaluations, emergency war order testing, additional duties, and participation in off-duty education further substantiate their selection as SAC Missile Crew of the Month.



WE HAVE THE TECHNOLOGY

cont. from pg 17

and an average crew. What error spread do we tolerate? Qualified as opposed to Qualified-with-training is the usual error allowable, therefore, we should check out these programs the same way we check out a new copilot. Watch him as he runs through various data under various conditions and always submit the data to the aircraft commander for final approval.

The system exists not only in space, but in time too. Someone must be responsible to keep the system going. Maintenance should be purchased along with the equipment, but there is more to it than that. Procedures must be drawn up to regulate its use.

Ouput should never be tracked manually. This destroys the whole reason to computerize. If the machine is untrustworthy, it must be scrapped.

However, data must be tracked automatically. Accidents happen, and when they do, we need back-up disks and recent listings. This is where the real power of small user-oriented systems comes in.

The majority of software must be maintained by the seller.

Extensive documentation must accompany all locally written procedures. Extensive instructions must accompany all purchased software.

Programs will not be rewritten once they are in the system. If they are, they must be reverified.

Never process classified data on computers not built specifically for that purpose.

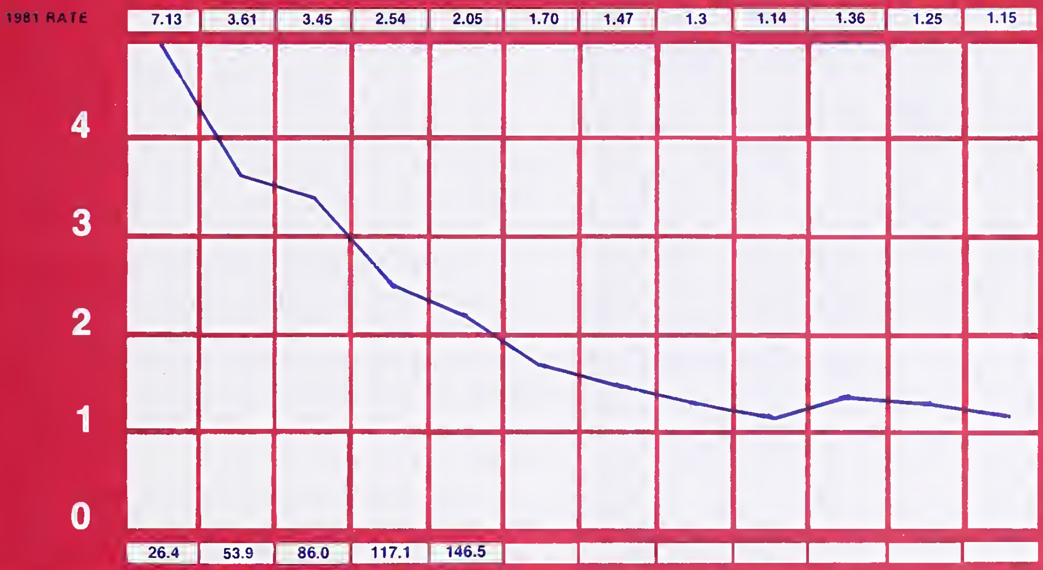
Finally, here is a test for success. If the computer is no longer a curio, if the average crewmember and staff officer alike view it much as they view a typewriter, if they see it as a tool to gain a result, then we will have achieved our goal.

Air Force wide changes cannot come about locally. There must be some uniformity among wings. But wings, such as the 100th, will have differences due to the uniqueness of the SR-71 mission. It will be a major effort, but the effect will be greater efficiency with increased effectiveness. In other words, we will conserve a scarce resource — **money**.

Maj Jerry Dilley's name was forwarded to us as Maj Tilly in the May, "Perfect Practice Makes Perfect" article . . . Sorry about that!

1982 Flying Safety Rate

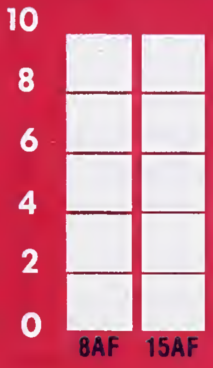
SAC CLASS A MISHAP RATE (PER 100,000 FLYING HRS)



CUMULATIVE FLYING TIME (1,000 HRS)

MISHAPS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1981	2	0	1	0	0	0	0	0	0	1	0	0
1982	0	0	0	0	0							

1982 SUBORDINATE CMD RATES



MISHAP STATUS

+KC-135A	MAR 82
+KC-135A	MAR 82

LEGEND ︿ = 1981 RATE (SAC)
+ = ANG
− = AFRES

Challenges Ahead . . .

cont. from page 3

In recent months, a proposal for a U.S.-Soviet nuclear weapons freeze has attracted widespread attention as well as proposals advanced by the ground zero movement. In the final analysis these proposals represent the best of intentions: to reduce the likelihood of nuclear war. Intentions alone unfortunately are not enough!

The Strategic Air Command has always endorsed and supported prudent efforts to reduce the risk of war. However, under current conditions, the initiative to freeze all testing, production and deployment of nuclear weapons and their associated delivery vehicles represents a risk to our national security. This is an overly simplistic approach to a highly complex issue and it disregards both the lessons of history and current military realities.

Arms control initiatives should be the companion of modernization in a broad strategy to simultaneously reduce the threat of nuclear confrontation and ensure that the nation's vital defense and security needs are not jeopardized. We will not achieve mutual and substantive reductions in nuclear weaponry that are verifiable until we convince the Soviets of our resolve to resist their efforts to inject instability into the nuclear balance. This requires modernization, it cannot be accomplished by simply freezing nuclear weapons at existing levels.

It is my firm belief that the majority in America support the modernization programs I have outlined and they are placing their trust in the military to effectively and efficiently see these programs through to completion.

Keeping this trust requires much from each one of us. If we are to succeed, we must continually rededicate ourselves to those basic core values upon which our profession is based: personal integrity, duty, honor, loyalty, trustworthiness and courage. To me these qualities are as vital to a strong and effective military as the most potent weapons we could ever develop.

We know that in the years ahead nothing is going to get simpler. Right decisions will be harder to make. Advancing technology will make systems progressively more complex. We will need dedicated professionals such as yourselves with the background, capacity and desire to man, operate and maintain our new systems as they come on line. The opportunities are just around the corner and from talking with many of you on my base visits I know you are up to the challenges and opportunities that lie ahead. ★ ★ ★ ★

Safety....

cont. from pg 21

II's Douglas MacArthur wearing anything but a soft hat? What were they trying to prove?

And there was that firebrand of the ETO — old Blood and Guts Patton. He wore his hard hat, or at least a helmet liner, all of the time. But he had to prove how tough he was by insisting that the vehicles in his command move with tops down — and to hell with whatever Old Man Weather happened to be dropping off at the time.

There are other stories and other examples and you can supply your own variations to the theme.

But the essence of it all simply is this:

We can talk about safety as a hoped-for ideal. But we will not even go through the motions of doing things safely unless they do not disturb our own ideas of what is manly.

It also means that, unless we make some sweeping changes in our own thinking about safety and about its relationship — if any — to manliness and all the business of being a man, we will continue to have the same old disappointing safety statistics year after year — in the air, on the highway, even in the home.

In the field of aviation safety, we can expect that the accident rate for junior flying officers will continue high because there are "manly" young men who are trying to prove themselves. But the same rates may apply for those officers in their "dangerous forties" who are trying to reprove their manhood all over again.

Probably we will arrive at no improvement at all in the matter of safety until we reevaluate "manhood." First of all, this must be a personal reevaluation.

Is a MAN the one who runs headlong into a well camouflaged machine gun nest knowing it means sudden death? Or is the real MAN the one who flanks the nest and throws in the destroying grenade?

Is a MAN the pilot who says, "give me a plane and point me toward the target." . . . or the one who says, "a flak vest and a hard hat will help me on this mission"?

Is a MAN the one who scoffs: "I'll fly through this front or die trying" . . . or the pilot who is willing to sit a spell, wait for the ugly weather front to pass, and then gets up there to deliver the goods?

It's a strange heritage which decrees we are MEN only when we disregard caution.

And all of the safe-flying, safe-driving and even safe-living campaigns in the world will be of little avail until we conclude that being safe isn't being sissy. It will take a lot of education!

SAC
SAFETY SCREEN

69 BMS, Loring Crew R-026: P Capt John R. Culclasure, CP Capt James P Stanton, RN Capt Olenius Olson III, RN 1Lt Steve Suhay III, EWO 2Lt Ronald Rosenberger, G Sgt Charles E Hogan

407 AREFS, Loring Crew R-161: P Maj Billy L Dycus, CP 1Lt Jack G Cinque, N Capt Ellen C Ernst, BO SSgt Joseph P Baka

42 AREFS, Loring Crew E-115: P Capt Kenneth R Crawford, CP Lt Terrance R McCabe, N Lt Michael D Smiley, BO Sgt Larry E Robbins

46 AREFS, K I Sawyer Crew E-106: P Capt Richard J Anen, CP 1Lt Thomas R McCoy, N 1Lt Jack R Boring Jr, BO Sgt Donald L Baughman

644 BMS, K I Sawyer Crew E-34: P Capt Stephen R Thomas, CP 1Lt Stephen D Schmidt, RN Capt Michael R Martini, NN 1Lt Kevin C Molli, NE 1Lt Frederick J Norman, AG Sgt Robert J Steinbauer

100 AREFW, Beale Crew E-124: P Capt John G Williams, CP 1Lt Thomas R Dockery, N Capt Keith E Salisbury, BO SSgt John M Lobenberg

909 AREFS, Kadena AB: P Capt Robert M Vendley, CP Capt Don B Dozier, IN Capt Frank S Garland, IS Sgt Tina M Skrzypiec

128 AREFG Milwaukee (WIANG): P Maj Daniel A. Stucka, P 1Lt Donald V Paddock, N Capt Michael W Leahan, BO MSgt Ray T Fassett

340 BMS, Blytheville Crew E-11: P Capt Ralph T Cabaniss, CP Capt Barry L Byrd, RN Capt Bradley W Mandeville, NN 1Lt Albert T Mackey, EW 1Lt Gregory R Reynolds, AG A1C James E Cochran

340 BMS, Blytheville Crew E-33: P Capt David A Ochsner, CP 1Lt Lawrence D Bill, RN Capt Steven J Redmann, NN 1Lt Richard N Williams, EW 1Lt Joseph J Presutto, AG SrA James P Massey

97 AREFS, Blytheville Crew R-109: P Capt James W Pzinski, CP 1Lt Michael A Fountain, NN Capt Paul W Bekebrede, BO Sgt Darrell K Fair

97 AREFS, Blytheville Crew R-121: P Capt William J Willson, CP 1Lt Teresa Norman, NN 1Lt Keith J McDonald, BO Sgt David B Corn

509 AREFS, Pease Crew E-120: P Capt Robert Fleury, CP 1Lt James Pennekamp, N Capt Carl Roediger, BO SSgt Robert Christopher

351 SMW, Whiteman Crew E-034: MCCC 1Lt Alphonso S Price, DMCCC 2Lt Jon A Eller

381 SMW, McConnell Crew E-121: MCCC Capt Roosevelt Thompson, DMCCC 1Lt Phillip A Cox, MFT SSgt Thomas C Veltman, MSAT A1C Andrew G Sadlowski

44 SMW, Ellsworth Crew R-092: MCCC Capt Michael E Devaney, DMCCC 2Lt Alan B Lyons

90 SMW, F E Warren Crew R-139: MCCC 1Lt Thomas Selinka, DMCCC 2Lt Derek W Brown

341 SMW, Malmstrom Crew R-050: MCCC 1Lt Stephen H Holmgren, DMCCC 2Lt Fidencio Pena Jr

390 SMW, Davis-Monthan Crew E-192: MCCC Capt Benito D Perez, DMCCC Capt Steven M Bower, BMAT Amn Patrick D Minnehan, MFT Sgt Wayne A Gerner

The SAC Safety Screen is an honor roll of SAC's most professional crews. To gain listing on the Screen, crew members must be nominated by their unit commanders and meet high selection criteria of experience in their aircraft or missile system *IAW AFR 127-2/SS1.*

UNIVERSITY OF FLORIDA
3 1262 09683 6324

FLARE

A PROUD SALUTE

By SSgt. Leilani L. Lewis

Somewhere a bugle softly sounds
The message of renown,
And men inside their buildings wait
Until the flag comes down.

And others run to get their cars
Quite harrowed or dismayed,
Afraid they will not reach the gate
Before retreat is played.
Not thinking of the flag or men
Who fought to keep it flying.

How many would be glad to stand
Whose bodies now are mute,
Or have no hand that thay might raise
And stand in proud salute.

So accept it not as duty
But a privilege even more,
And receive it as an honor
Instead of just a chore.